

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOOL</b>	School of Agricultural Sciences		
<b>ACADEMIC UNIT</b>	Biosystems & Agricultural Engineering		
<b>LEVEL OF STUDIES</b>	UNDERGRADUATE		
<b>COURSE CODE</b>	<b>BAE_440</b>	<b>SEMESTER</b>	<b>4<sup>TH</sup></b>
<b>COURSE TITLE</b>	<b>STRENGTH OF MATERIALS</b>		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
Lectures	3		
Tutorials	2		
Laboratory	0		
<b>TOTAL</b>	<b>5</b>	<b>5</b>	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	Background General Knowledge Skills development		
<b>PREREQUISITE COURSES:</b>	There are no prerequisite courses.		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek .-For Erasmus students in English		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	Yes		
<b>COURSE WEBSITE (URL)</b>			

### (2) LEARNING OUTCOMES

<p><b>Learning outcomes</b></p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> <li>• <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i></li> <li>• <i>Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i></li> <li>• <i>Guidelines for writing Learning Outcomes</i></li> </ul>								
<p>Upon successful completion of the course, students will be able to accomplish the following:</p> <ul style="list-style-type: none"> <li>• Preparation and construction of free body diagrams.</li> <li>• Solve problems that include static stresses and distortions.</li> <li>• Calculation of axial deformations of a structure.</li> <li>• Solving problems with spindles under torsional loads.</li> <li>• Calculation of displacements in beams under various loads and supports.</li> <li>• Calculation of shear stresses and bending moments in beams, using the corresponding diagrams.</li> </ul>								
<p><b>General Competences</b></p> <p><i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i></td> <td style="width: 50%; border: none;"><i>Project planning and management</i></td> </tr> <tr> <td style="border: none;"><i>Adapting to new situations</i></td> <td style="border: none;"><i>Respect for difference and multiculturalism</i></td> </tr> <tr> <td style="border: none;"><i>Decision-making</i></td> <td style="border: none;"><i>Respect for the natural environment</i></td> </tr> <tr> <td style="border: none;"><i>Working independently</i></td> <td style="border: none;"><i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i></td> </tr> </table>	<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>	<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>	<i>Decision-making</i>	<i>Respect for the natural environment</i>	<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
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<i>Team work</i> <i>Working in an international environment</i> <i>Working in an interdisciplinary environment</i> <i>Production of new research ideas</i>	<i>Criticism and self-criticism</i> <i>Production of free, creative and inductive thinking</i> ..... <i>Others...</i> .....
Search, analysis and synthesis of data and information, using the necessary technologies Production of new research ideas Respect for the natural environment Promoting free, creative and inductive thinking	

### (3) SYLLABUS

<ol style="list-style-type: none"> <li>1. Overview of materials engineering</li> <li>2. Definition of voltage</li> <li>3. Mechanical behavior in tension and compression</li> <li>4 Shear</li> <li>5. Torsion</li> <li>6,7 and 8, Beam bending</li> <li>9. Dislocations in beams and shafts</li> <li>10. Combined stress</li> <li>11.12: Mechanical behavior of metallic materials</li> <li>13. SUMMARY</li> </ol> <p style="text-align: center;">Each course is accompanied by tutorial exercises or computer simulation exercises.</p>
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### (4) TEACHING and LEARNING METHODS - EVALUATION

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	Face to face teaching, Experiential activities, Virtual Laboratory training	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i>	<ul style="list-style-type: none"> <li>• Use of ICT (power point) in Teaching</li> <li>• Use of ICT (power point) in Laboratory Training</li> <li>• Use of ICT in Communication with students (Learning process support through the electronic platform e-class).</li> </ul>	
<b>TEACHING METHODS</b> <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i>  <i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	39
	UNGUIDED STUDY	37
	Study hours. Literature survey	49
	Course total	<b>125</b>
<b>STUDENT PERFORMANCE EVALUATION</b> <i>Description of the evaluation procedure</i>  <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i>  <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	<ol style="list-style-type: none"> <li>1. The main assessment criteria focus on understanding and correlating the knowledge that students gain from the course with other knowledge. Particular emphasis is placed on whether they have developed the ability to apply this knowledge to crop selection and to assess the impact of these changes on the environment. Emphasis is also placed on demonstrating critical ability and justifying the choices they make in each problem.</li> <li>2. Evaluation is dynamic. It mainly involves problem solving. is done orally or in writing or with a combination of the two, with or without pre-examination on the basic principles of the course, with or without exculpatory advances and with</li> </ol>	

	<p>other test or inventive methods, depending on the composition of the dynamics and the needs of the audience.</p> <p>3. The above are done in the Greek language. For foreign language students (eg Erasmus students) conducted in English</p>
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##### (5) ATTACHED BIBLIOGRAPHY

<ul style="list-style-type: none"> <li>▪ <i>Τεχνική Μηχανική, ΤΟΜΟΣ 2, Κωδικός Βιβλίου στον Εύδοξο: 45424, 2η έκδ./1999, Βαρδουλάκης Ιωάννης, ISBN: 978-960-266-053-9, Εκδότης: Σ.ΑΘΑΝΑΣΟΠΟΥΛΟΣ &amp; ΣΙΑ Ο.Ε.</i></li> <li>▪ <i>Μηχανική Παραμορφωσίμων Σωμάτων ΙΙ, Κωδικός Βιβλίου στον Εύδοξο: 45384, 1η έκδ./1991, Τσαμασφόρος Γεώργιος Ι., ISBN: 978-960-266-078-2, Εκδότης: Σ.ΑΘΑΝΑΣΟΠΟΥΛΟΣ &amp; ΣΙΑ Ο.Ε.</i></li> <li>▪ <i>Αντοχή των υλικών, Κωδικός Βιβλίου στον Εύδοξο: 18548695, 1η έκδ./2004, Παπαμίχος Ευρυπίδης, Χαραλαμπίκης Νικόλαος, ISBN: 960-418-048-7, ΕΚΔΟΣΕΙΣ Α. ΤΖΙΟΛΑ &amp; ΥΙΟΙ Α.Ε.</i></li> <li>▪ <i>Αντοχή των Υλικών, Κωδικός Βιβλίου στον Εύδοξο: 2589, 2η έκδ./1988, William A. Nash, ISBN: 978-960-7610-11-9, ΕΣΠΙ ΕΚΔΟΤΙΚΗ Εταιρεία Περιορισμένης Ευθύνης</i></li> <li>▪ <i>Μηχανική των Υλικών, 6η Έκδοση (2012), Κωδικός Βιβλίου στον Εύδοξο: 22693328, Συγγραφείς: Beer Ferdinand P., Johnston Russell E., ISBN: 978-960-418-381-4, ΕΚΔΟΣΕΙΣ Α. ΤΖΙΟΛΑ &amp; ΥΙΟΙ Α.Ε.</i></li> </ul>
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